REMARKS

The rejections:

under 35 U.S.C. §102(b) of Claims 38, 39, 42-45, 50, 56, 98, 100, 106, and 115 as anticipated by U.S. 5,615,626 (Floyd et al) in view of Merriam-Webster's Collegiate Dictionary 10th ed (Merriam-Webster),[1] and

under 35 U.S.C. §103(a) of Claims 40, 46, 78, 101-104 and 116 as unpatentable over Floyd et al in view of Merriam-Webster, and of Claims 77 and 105 as unpatentable over Floyd et al in view of Merriam-Webster, and further in view of U.S. 4,983,549 (Greve),

are respectfully traversed.

As recited in active Claim 38, the present invention is a process of manufacturing glass from vitrifiable materials comprising a step of supplying all or part of the thermal energy necessary for melting vitrifiable materials by injecting a combustible mixture comprising at least one fuel and at least one oxidizer gas, or gaseous products resulting from combustion of the combustible mixture, below the level of the mass of said vitrifiable materials, and melting said vitrifiable materials, wherein said vitrifiable materials comprise liquid or solid combustible elements, or mixtures thereof, and materials selected from the group consisting of batch materials, cullet, vitrifiable waste, and mixtures thereof, and manufacturing glass from said melted vitrifiable materials.

The choice made according to Claim 38 is very advantageous for the whole glass industry. It makes it possible to feed the melting furnace with at least partly organic materials and glass/organic composite materials that were hard to recycle (like windshields or

[1] That the new prior art (Merriam-Webster) is not listed in the statement of the rejection is irrelevant; reliance thereon is all that is necessary. "Where a reference is relied on to support a rejection, whether or not in a 'minor capacity,' there would appear to be no excuse for not positively including the reference in the statement of rejection." *In re Hoch*, 166 USPQ 406, 407 n.3 (CCPA 1970). See also MPEP 706.02(j).

DISCUSSION OF THE AMENDMENT

Claim 38 has been amended to positively require a glass manufacturing step. Claim 100 has been canceled as now redundant. Claims 101, 103 and 104 have been amended to depend on Claim 38. Claim 105 has been amended to clarify that a recycling step is present. Claim 106 has been amended analogously to the above-discussed amendment to Claim 38. Claim 115 has been amended to depend on Claim 38, or to be identical to the claim as submitted in the Appeal Brief filed July 9, 2003.

No new matter has been added. Claims 38-40, 42-46, 50, 56, 77, 78, 98, 101-106, 115 and 116 are now active; Claims 41, 47-49, 51-55, 57-76, 79-97, 99 and 107-114 stand withdrawn from consideration.

mineral wool with organic binder). This is possible only because the burners are submerged ones. Only those particular burners make it possible to bring the combustibles at their vicinity, below the bath of molten glass. Furthermore, as explained in the specification, the submerged burners generate a lot of convection movements within the bath of molten glass, which makes the permanent renewal of the combustible elements at their vicinity possible. This is very innovating and could not have been imagined with conventional melting furnaces (either those using immersed electrodes and called electrical furnaces or those using burners above the bath of molten glass and sometimes called gas furnaces). This is a completely new use of the technology of the submerged burners (recycling/valorization of composite/waste materials), which renders it more attractive.

Merriam-Webster is relied on for a definition of "glass." However, since the present invention is directed to persons of ordinary skill in the art of making what are commonly known as glass and glass-containing products, it is not seen what relevance Merriam-Webster has to the issues.

Floyd et al discloses a process for disposal of waste materials, including municipal waste such as garbage, industrial wastes, waste materials including rubber and plastics-based materials, and ash waste from municipal waste incinerators and toxic waste incinerators, wherein the waste is charged to a reactor of a top-submerged lancing injector reactor system, containing a molten slag bath maintained in a turbulent condition during charging of the waste by top-submerged injection therein of a free-oxygen containing gas, using at least one top-submerged lance of the system. The waste is taken into the molten bath and is caused to circulate therein to a combustion/oxidation zone generated by the top-submerged injection. Constituents of the waste are subjected to free-oxygen of the injected gas in that zone and to heat energy of the slag, and thereby combusted/oxidized and/or decomposed. See the Abstract thereof. In addition, Floyd et al discloses that while the waste is being combusted in

the reactor, the slag may be maintained at a temperature of from about 1100°C to 1800°C (column 3, lines 34-36 and column 6, lines 3-10). Floyd et al discloses further that rather than simply producing an ash residue as in existing processes, the process of their invention forms a slag product which, being a glassy phase and essentially non-porous (column 6, line 57), essentially encapsulates any ash produced and retains in solid solution any heavy metals which are not able to form a fume (column 7, lines 44-48). As disclosed at column 10, lines 45-48, Floyd et al is concerned with substantially complete combustion/oxidation of waste charged to their reactor.

The slag of Floyd et al acts, in essence, as a vehicle for the substantially completely combusted/oxidized waste therein. In the presently-claimed invention, while some combustion necessarily may occur due to the presence of combustible elements, nevertheless, the most-desired components of the vitrifiable materials, such as glass, are melted, not combusted. Floyd et al's apparatus is essentially an incinerator, not a melting chamber. One of Applicants' main goals herein is the ability to recycle vitrifiable materials such as glazings. Clearly, such recycle could not be achieved with the process of Floyd et al.

The Examiner finds that Floyd et al's municipal waste would include various "glazings." In reply, municipal waste would include just about anything. Glass materials are not even listed in Floyd et al. One skilled in the art would not look to Floyd et al to solve a problem regarding recovering vitrifiable materials, such as glazings.

The Examiner particularly relies on the example in Floyd et al wherein waste comprising ash from an existing process toxic waste incinerator is treated by smelting in a reactor according to Floyd et al's invention, wherein the waste feed contains a number of oxides, which the Examiner finds are glass-forming materials. As the table at column 13 shows, the carbon therein is almost completely combusted, while there is some change in the relative amounts of oxides present in the slag, based on their amounts in the waste feed. The

Examiner appears to suggest that such a waste feed could be used to manufacture glass. However, it is only with the present disclosure as a guide that this would be suggested, since Floyd et al discloses their slag only as a building material or for disposal for landfill (column 6, lines 58-60; column 13, lines 18-22). That slag is disclosed as a "glassy" byproduct is not suggestive of anything with regard to manufacturing glass.

Nor does Floyd et al pertain to glass recycling. The only disclosure of recycle in Floyd et al is "at least some slag can be recycled to the reactor as low-energy feed stock for controlling the bath temperature" (column 6, lines 55-56), clearly not something one would recycle glass for.

In response to Applicants' argument that Floyd et al is not concerned with melting waste, the Examiner notes Floyd et al's disclosure at column 8, lines 6-25 that some of the waste is combusted or "simply dissolved into the slag bath."

In reply, the disclosure in Floyd et al at column 8, lines 6-25, relied on by the Examiner, relates to other particulate fillers present in rubber and plastics material that are "depending on their composition, simply dissolved in the slag bath." However, Floyd et al discloses nothing else with regard to such other particulate fillers. Indeed, Floyd et al seems most concerned about those fillers that combust (column 2, lines 52-64). At any rate, Floyd et al's ultimate goal is substantially complete combustion or oxidation, not melting, as pointed out above.

Notwithstanding everything argued above, Floyd et al is nonanalogous art. Two criteria have evolved for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved. In re Clay, 966 F.2d 656, 658, 23 USPQ2d 1058, 1060 (Fed. Cir. 1992). See also MPEP 2141.01(a).

It must be kept in mind that the hypothetical person of ordinary skill in the art would not have had knowledge of Applicants' discovery, unlike the Examiner, in seeking to solve the problem which Applicants sought to solve. One skilled in the art would have had no reason to look at **any** art concerning disposal of waste materials.

Floyd et al is **not** from the same field of endeavor as the present invention which, as described in the specification herein at page 1, lines 4-7, relates to a process for melting and refining vitrifiable materials for the purpose of continuously feeding glass-forming plants with molten glass. Floyd et al's field of endeavor is disposal of waste materials. Nor is Floyd reasonably pertinent to the particular problem with which the inventors herein were involved. As described in the specification at page 2, lines 21-29, the object of the present invention was to improve melting and refining processes, aiming especially to use plants which are more compact and/or to have greater operating flexibility and/or greater production efficiency and/or to manufacture glass that has hitherto been difficult to melt or to refine and/or with a low energy cost, etc., without various industrial advantages, as described earlier in the specification, being obtained to the detriment to the quality of the glass produced. Floyd et al is not concerned with any problems concerning the production of glass.

Claim 46 is separately patentable, because Floyd et al neither disclose nor suggest the subject matter of Claim 38, wherein the melting is preceded by a step of preheating the vitrifiable materials to at most 900°C. Floyd et al shows no such preheating.

In response, the Examiner finds that a significant proportion of the feed stream of Floyd et al is incinerator ash or steel swarf, relying on the example therein, and in some cases, recycled slag, relying on the disclosure at column 6, lines 53-56, and finds further that an "immediately preceding incineration or steel refining process would have provided preheated vitrifiable materials." The Examiner then holds that it would have been obvious to preheat the materials at 900°C or lower "since the incineration of organic matter would likely

have taken place well below 900°C, and the incinerator ash would have to be rushed from the incineration from the melting stage to prevent it from cooling excessively."

In reply, this is merely unsupported speculation on the Examiner's part, and there is no reason to believe that such preheating would have been limited to a maximum temperature of 900°C.

Claim 78 is separately patentable, because Floyd et al neither disclose nor suggest the subject matter of Claim 40, wherein the composite materials comprising glass and metal are at least one of glazing with metallic coating, glazing with enamel coating, and glazing with electrical connecting means. Floyd et al shows no such materials.

In response, while acknowledging that Floyd et al does not disclose any of the materials recited in Claim 78, the Examiner finds that motor vehicle tires and vehicle battery casings, disclosed in Floyd et al as wastes applicable to their invention (column 2, lines 49-51) "are known to contain metallic belts and metallic electrodes, respectively. Considering that all of the waste was charged into a molten slag at glass or at slag melting temperatures, it would not have mattered whether the metallics were attached to glass parts or organic parts. The metal would have oxidized rapidly no matter what it was attached."

In reply, and as discussed above, glass materials, i.e., glazings, are not even listed in Floyd et al.

Claims 101-104 are each separately patentable, because Floyd et al neither disclose nor suggest any of the glass products of these claims.

In response, the Examiner finds that "future use or properties of the product do not change the manipulative steps of the process of the invention."

In reply, since Floyd et al does not suggest making glass *per se*, Floyd et al clearly do not suggest any particular type of glass.

Claim 115 is separately patentable, because Floyd et al neither disclose nor suggest the subject matter of Claim 38, wherein the vitrifiable material is melted into a foamy glass. Floyd et al does not show foamy glass. Indeed, the slag of Floyd et al, which the Examiner relies on, is disclosed as essentially non-porous (column 6, line 57).

In response, the Examiner finds that Floyd et al's Figure 1 shows a "very porous" (Examiner's quotations) treated mass, and that Claim 115 does not solidify the molten foamy glass.

In reply, neither Figure 1, nor any other disclosure in Floyd et al, describes a foamy glass. In addition, it is now clear from Claim 115 that glass is manufactured from foamy glass.

Claim 116 is separately patentable, because Floyd et al neither disclose nor suggest the subject matter of Claim 115, wherein the foamy glass has a density of approximately 0.5 to 2 g/cm^3.

In response, the Examiner finds that it would have been obvious to a person of ordinary skill in the art to melt a foamy glass having the recited density "because the specific process conditions recited are not critical but are merely optimal for the particular material being treated and they would be within the skill of the art to determine (citation omitted)."

In reply, since Floyd et al disclose and suggest nothing with regard to a foamy glass, it follows that Floyd et al disclose and suggest nothing with regard to a density thereof. Moreover, Floyd et al discloses specifically that the slag of their invention is essentially non-porous (column 6, line 57). It is the slag of Floyd et al that is disclosed as having a subsequent utility. Clearly, one skilled in the art would not take from Floyd et al that a foamy glass could be obtained therefrom.

Greve discloses a method for recycling reinforced plastic composite materials, such as glass reinforced plastic composite materials, wherein the materials are pyrolyzed to separate

the plastic matrix material and the glass reinforcement material, from which glass reinforcement material virgin glass is obtained. While Greve clearly provides motivation to separate glass from plastic in the recycling of glass reinforced plastic composite materials, there is no disclosure or suggestion in the applied prior art that such separation could be obtained using Floyd et al's process. Indeed, without the present disclosure as a guide, one skilled in the art would not have combined Floyd et al and Greve.

For all the above reasons, it is respectfully requested that the above rejections be withdrawn.

In a telephone conversation between Applicants' counsel and the Examiner on September 21, 2004, counsel noted that the copy of initialed Form PTO-1449 for the Information Disclosure Statement (IDS) filed May 27, 2004, attached the Office Action, did not contain the Examiner's initials for the reference listed as "AW." Accordingly, the Examiner sent by facsimile to counsel a completely initialed Form PTO-1449 for said IDS, receipt of which counsel acknowledges. **Submitted herewith** is a copy of said completely initialed form, in order to ensure that it is made of record.

All of the presently-pending and active claims in this application are now believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this case to issue.

Respectfully submitted,

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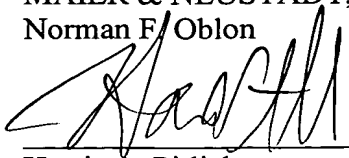

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SHEET 1 OF 1

Form PTO 1449 (Modified) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

LIST OF REFERENCES CITED BY APPLICANT

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FILING DATE: March 1, 2000	GROUP: 1731

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						
	AL						
	AM						
	AN						

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	TRANSLATION YES	TRANSLATION NO
SV	AO	JP 61 048438	1986	Japan (Abstract)		
	AP					
	AQ					
	AR					
	AS					
	AT					
	AU					
	AV					

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, etc.)

SV	AW	Production and Use of Fused Cast Refractories, O.N. Popov et al., Metallurgy Publishing House, 1985 (original and English translation provided).
	AX	
	AY	
	AZ	

☐ Additional References sheet(s) attached

Examiner: Jeanvoine Date Considered: 9-1-04

*Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.